

AMENDMENTS TO THE CLAIMS

1-23 (cancelled).

24. (new): A method of obtaining a measurement plane from a multi-section tunable laser diode, the method comprising:

- (a) obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction;
- (b) increasing a second control current/voltage by a step;
- (c) obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current/voltage through a range of values in a negative direction;
- (d) increasing a second control current/voltage by a step;
- (e) repeating steps (a) – (d) until a sufficient range of the second control current/voltage has been used; and
- (f) identifying, in a resultant data set, regions of hysteresis.

25. (new): A computer readable medium having stored therein instructions for causing a processor to execute the method of claim 24.

26. (new): The method of claim 24 wherein identifying in the resultant data set the regions of hysteresis comprises applying a Laplacian operator to the resultant data set, wherein the regions of hysteresis are those regions where a value obtained by applying the Laplacian operator to data at a specified second control voltage/current is above a threshold value.

27. (new): The method of claim 24 wherein the first and second set of measurement values are obtained by transmitting the output of the laser diode to a photo diode, whereby an output of the photo diode provides the first and second measurement values.

28. (new): The method of claim 24 wherein the first and second set of measurement values are obtained by transmitting the output of the laser to a photo diode via an optical filter, whereby an output of the photo diode provides the measurement values.

29. (new): The method of claim 24 wherein the first and second set of measurement values are obtained by measuring the voltage on a section of the laser where current is used to control the laser output.

30. (new): The method of claim 24 wherein the first and second set of measurement values are obtained by measuring the current on a section of the laser where voltage is used to control the laser output.

31. (new): The method of claim 24 wherein the first and second set of measurement values are obtained by transmitting the output of the laser to a system or instrument that can measure either linewidth or Side Mode Suppression Ratio (SMSR) of the laser.

32. (new): The method of claim 24 wherein the regions of hysteresis are determined, at least in part, using an erosion operator on the resultant data set.

33. (new): The method of claim 24 wherein the value of the increment of the first and second control currents is such that any changes in any single control current between measurements are below a predetermined threshold, and wherein the predetermined threshold is selected so as to substantially minimize a temperature effect contribution to the output of the laser.

34. (new): The method as claimed in claim 24 wherein the range of values measured for the first current/voltage or the second current/voltage is non-linear.

35 (new): A method of obtaining a measurement plane from a multi-section tunable laser, the method comprising:

- (a) obtaining a first set of measurement values for the output of the laser diode by increasing a first control current through a range of values in a positive direction and decreasing a second control current in a negative direction at the same time;
- (b) increasing one of the first or second control currents by a step;
- (c) obtaining a second set of measurement values for the output of the laser diode by increasing the second control current through a range of values in a positive direction and decreasing a first control current in a negative direction at the same time; and
- (d) repeating steps (a) – (c) until a sufficient range of the first and the second control current has been used, wherein total control currents to the laser are changing at a continuous rate.

36. (new): A computer readable medium having stored therein instructions for causing a processor to execute the method of claim 35.

37. (new): A control system for obtaining a measurement plane from a multi-section tunable laser diode, the control system comprising:

means for obtaining a first set of measurement values for an output of the laser diode by increasing a first current through a range of values in a positive direction;

means for increasing a second control current by a step after obtaining the first set of measurement values;

means for obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current through a range of values in a negative direction;

means for increasing the second control current by a step after obtaining the second set of measurement values;

means for operating the foregoing means elements to repeatedly obtain first and second measurement values and to increase the second control current by a step until a sufficient range of the second control current has been used; and

means for identifying, in a resultant data set, regions of hysteresis.

38. (new): The control system of claim 37 wherein the means for identifying in the resultant data set regions of hysteresis comprises means for applying a Laplacian operator to the resultant data set, wherein the regions of hysteresis are those regions where a value obtained by applying the Laplacian operator to data at a specified current is above a predetermined threshold.

39. (new): The control system of claim 37 wherein the first and second set of measurement values are obtained by transmitting the output of the laser diode to a photo diode, whereby an output of the photo diode provides the first and second measurement values.

40. (new): The control system of claim 37 wherein the first and second set of measurement values are obtained by transmitting the output of the laser to a photo diode via an optical filter, whereby an output of the photo diode provides the measurement values.

41. (new): The control system of claim 37 wherein the regions of hysteresis are determined, at least in part, using an erosion operator on the resultant data set.

42. (new): The control system of claim 40 wherein the value of the increment of the first and second control currents is such that any changes in any single control current between measurements are below a predetermined threshold, and wherein the predetermined threshold is selected so as to substantially minimize a temperature effect contribution to the output of the laser.

43. (new): A control system for obtaining a measurement plane from a multi-section tunable laser diode, the control system comprising:

means for obtaining a first set of measurement values for an output of the laser diode by increasing a first control current through a range of values in a positive direction and decreasing a second control current in a negative direction at the same time;

means for increasing one of the first or second control current by a step after obtaining the first set of measurements;

means for obtaining a second set of measurement values for the output of the laser diode by increasing the second control current through a range of values in a positive direction and decreasing a first control current in a negative direction at the same time; and

means for operating the foregoing means elements to repeatedly obtain first and second sets of measurements and to increase one of the first or second control current by a step until a sufficient range of the first or second control current has been used, where total control currents to the laser are changing at a continuous rate.

44. (new) : A control system for obtaining a measurement plane from a multi-section tunable laser diode, the control system comprising:

a current source control for obtaining a first set of measurement values for an output of the laser diode by increasing a first control current through a range of values in a positive direction;

a meter for obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current through a range of values in a negative direction;

an increment function for increasing a second control current by a step after obtaining the first set of measurement values but before obtaining the second set of measurement values, and for incrementing the second control current by a step after obtaining the second set of measurement values;

a repetition function for repeatedly obtaining first and second measurement values and incrementing the second control current over a predetermined range of possible values for the second control current; and

a computing apparatus for identifying regions of hysteresis in a resultant data set.

45. (new): A control system for obtaining a measurement plane from a multi-section tunable laser diode is provided, the control system comprising:

a current source control for obtaining a first set of measurement values for an output of the laser diode by increasing a first control current through a range of values in a positive direction and decreasing a second control current in a negative direction at the same time;

a meter for obtaining a second set of measurement values for the output of the laser diode by increasing the second control current through a range of values in a positive direction and decreasing a first control current in a negative direction at the same time;

a increment control for incrementing either the first control current or the second control current by a step after obtaining the first set of measurement values but before obtaining the second set of measurement values; and

a repetition control for repeatedly obtaining first and second sets of measurement values, and incrementing the first or second control current, over a predetermined range of the first and second control currents, wherein the total control currents to the laser are changing at a continuous rate.